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Beyond Brainstorming: Mind Mapping is more than a note taking or brainstorming strategy.

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Creativity is an idea-shaping process. Ideas themselves are a source of other ideas—and a useful strategy to remember something is to associate it with other ideas. One method of catalyzing the processes of creativity and memory is Tony Buzan's Mind Mapping technique.

Developed in the 1960's (Buzan & Buzan, 2010), Mind Mapping is a multi-purpose tool for note-taking in meetings and classes, analyzing study materials for better retention and comprehension, brainstorming ideas for event planning, problem-solving, decision-making, presentations, writing, research, and development.

Mind Mapping is remindful of Sigmund Freud's method of free association for uncovering repressed or unconscious memories. To construct a mind map,

start with a central theme (or image) in the middle of a sheet (or computer screen, if you prefer software). Then jot down other ideas (or images) as they occur, without regard to their relevance, on branches and sub-branches. Place associated images and/or words (not phrases) *on* branches and sub-branches. (Note: do not place images or words at the end of branches and sub-branches. This keeps open the possibility for further expansion, and helps you avoid thinking that an end has been reached). For a vivid representation, use different colors for items on branches and sub-branches. The end result is an interconnected colorful display of an associative structure of words and/or images—which you can then mine for key ideas for development, perhaps via a new mind map.

Some Mind Mapping Applications (Based on Buzan & Buzan, 2010; Created by using Freeplane, www.freeplane.org)

Mind mapping, like any other skill, requires practice for proficient use. Buzan and Buzan (2010) recommend that you initially brainstorm for 20 minutes, allowing your mind to flow as fast as possible, then take a short break. The break allows your mind to rest and incubate on the generated ideas and images. After the break, look at the map to identify useful ideas and integrate them. You can also look for hierarchies or categories within the map. Take a longer second break before embarking on another mind map from the existing one.

Buzan and Buzan (2010) observed that a mind map resembles the brain's neuronal structure with infinite connections. The brain is a big "associative machinery" (p. 37) and Mind Mapping "mimics thought processes" (p. 12) by naturally calling to mind associations to recorded words and images on the map as you progress through the task. They observe that the brain—unlike a sequential processing computer—uses multilateral thinking, going in many directions at once in a holistic manner, using both sides of the brain. This they label "radiant thinking."

Is Mind Mapping an "'ultimate thinking tool'" as its authors claim (Buzan & Buzan, 2010, p. xv)? A brief review of studies suggests that mind mapping produces comparable or superior results to traditional note-taking strategies. After adjusting for baseline and motivational differences, Ferrand, Hussain, and Hennessey (2002) found that medical students assigned to a Mind Mapping group showed superior recall one week following the study of a passage, compared to students assigned to a self-selected study group. Interestingly, self-reported motivation was lower in the Mind Mapping group.

Abi-El-Mona and Ad-El-Khalick (2008) found that 8th grade students assigned to a Mind Mapping group showed substantial gains in conceptual and practical understanding on a science achievement test than those assigned to a note summarization group. The authors noted that prior achievement levels did not moderate the results. The study lasted four weeks and students spent 10 minutes at the end of each session preparing mind maps or summaries in their respective groups.

D'Antoni, Zipp, Olson, and Cahill (2010), using medical students as participants, found their Mind Mapping and Standard Note Taking groups did equally well on a test of factual short-term retention and critical thinking. Javadnia, Bayat, Ghorbani, Ghanbari, & Ghodoosi (2011) compared Mind Mapping slide presentation with traditional PowerPoint slide presentation on lessons in head and neck osteology. On an end of the term test, female medical students in the Mind Mapping slide presentation group performed better than those in the traditional group. However, the performance of male medical students did not differ with the two methods of presentations. Female students also performed better than male students in the Mind Mapping group, but sex difference in performance did not occur in the traditional slides group.

Experimental studies are needed to compare Mind Mapping with other brainstorming strategies, such as speedstorming (Hey, Joyce, Jennings, Kalil, & Grossman, 2009), for efficacy in generating novel and useful ideas. Nevertheless, there seem to be many enthusiastic users of Mind Mapping. Schweizer (2011) notes that the world's leading companies—Infosys, Wipro, Boeing, Ford, Mayo Clinic, and BP—train their employees on Mind Mapping. Many websites explain Mind Mapping and offer software tools to help create mind maps.

It is always a good idea to have multiple strategies available for creative thinking, critical thinking, decision-making, and studying.

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